FACILITY STATUS CHANGE FORM

Date Submitted:	Area:	Control #:
Apr 30, 2012	300 Area	D4-300-059
Originator:	**Facility ID:**	
John Harrie	320 & 320BA	
Phone:	**Action Memorandum:**	
509.308.9935	Action Memorandum #3	

This form documents agreement among the parties listed below on the status of the facility D&D operations and the disposition of underlying soil in accordance with the applicable regulatory decision documents.

Section 1: Facility Status

☐ All D4 operations required by action memo complete.

☒ D4 operations required by action memo partially complete, remaining operations deferred.

Description of Completed Activities and Current Conditions:

Deactivation: Utility isolations were performed on the facility prior to beginning facility decontamination.

The following hazardous materials were removed prior to facility demolition: lead, asbestos, batteries, Freon, oil, light ballasts, HEPA filters and miscellaneous construction materials. Hazardous material removal and waste disposition was performed in accordance with *Removal Action Work for 300 Area Facilities*, DOE/RL-2004-77, Revision 2 (RAWP).

Demolition: Above-grade demolition of the 320 and the 320BA facilities were completed in August and September of 2011. Below-grade demolition of the 320 foundation walls above 3-feet was completed in March of 2012. The above-grade building debris were removed and disposed of at ERDF. The 320 basement walls and floor slab were left following EPA approval (See attachment 5). Process sewer piping below the slab, the process sewer sump and condensate sump were removed. Excavated soil was tested and used as backfill (see test results and EPA approval in attachment 6). The demolition was performed under Radiological and Industrial Hygiene controls.

Description of Deferral (as applicable):

The 320BA slab was deferred due to utility interference. Also a portion of the southeast corner of the 320 building foundation is deferred due to interference with by a live 13.8 kv line that runs diagonal right under the concrete

Section 2: Underlying Soil Status

☐ No waste site(s) present. No additional actions anticipated.

☒ Documented waste site(s) present. Cleanup and closeout to be addressed under Record of Decision.

☐ Potential waste site discovered during D4 operations. Waste site identification number <to be> assigned.

Cleanup and closeout to be addressed under Record of Decision.

Description of Current/As-Left Conditions:

The 320BA slab and the southeast corner of the 320 building foundation remain due to utility interference. The basement walls were demolished to minus 3-feet below grade. Portions of the 320 concrete basement floor were removed to access process sewer piping. A Civil survey and GPERS survey are included as attachments 3 and 4, respectively. Soils were evaluated before backfill, no anomalies noted.

Identification of Documented Waste Site(s) or Nature of Potential Waste Site Discovery (as applicable):

300-15, Process Sewer - was removed to the limits of the excavation layback.
The following rejected UICs were decommissioned during demolition:
UIC - 300-241, 320 Building Irrigation Line Effluent, Misc. Stream #79 - removed and backfilled.
UIC - 300-88, 320 Building Irrigation Line Effluent, Misc. Stream # 626 - removed and backfilled.
UIC - 300-89, 320 Building Irrigation Line Effluent, Misc. Stream # 627 - removed and backfilled.
UIC - 300-90, 320 Building Irrigation Line Effluent, Misc. #628 - removed and backfilled.

FACILITY STATUS CHANGE FORM

UIC - 300-91, 320 Building, Misc. Stream # 350 - was not found.

Section 3: List of Attachments

1. Facility information (building history, characterization and identification of documented waste sites).
2. Project photographs.
3. Civil Survey
4. GPERS Survey
5. EPA approval to leave basement walls and slab.
6. EPA approval to use excavated soil for clean backfill.

DOE-RL	Date 4/30/2012
Lead Regulator ☒ EPA ☐ Ecology	Date April 30, 2012

DISTRIBUTION:

EPA: Larry Gadbois, B1-46
Ecology: Rick Bond, H0-57
DOE: Rudy Guercia, A3-04
Document Control, H0-30
Administrative Record, H6-08
SIS Coordinator: Ben Cowin, H4-22
D4 EPL: Chris Strand, L7-10
Sample Design/Cleanup Verification: Megan Proctor, H4-22
FR Engineering: Jason Olsson, L6-06
FR EPL: Chris Strand, L7-10

Attachment 1: Facility Information

Building History:

The 320 Building, constructed in 1966, was known as the Physical Sciences Laboratory. A large addition was constructed in the 1980's increasing the building to 144' x 84' (25,000 square feet). The building was constructed of concrete and steel framing and contained 22 laboratories, offices, restrooms and supply rooms.

The 320 Building was located at the intersection of Cypress Street and Nebraska Avenue in the southern portion of the 300 Area. Throughout its history, the 320 building produced small amounts of low level wastes and was not connected to the radioactive liquid waste sewer (RLWS). The original work performed in the 320 building included gamma ray spectrographic analysis, physical measurements with instruments and various types of radiochemical separations involving low level radionuclides. Radiometric techniques, new mass spectrometric techniques, combined atomic absorption/mass spectrometric analysis, laser-based spectrometric techniques and many classified programs were developed in the 320 Building.

The 320BA Boiler Annex was located adjacent to the southeast corner of the 320 Building. Constructed in 1997, the 320BA boiler annex was a pre-engineered metal building on a concrete slab that measured approximately 24' x 30'. 320BA housed a gas fired package boiler system to provide heat for 330. The boiler annex was electrically heated with natural gas, water and sewer connections. Inside floor drains and intermittent blowdown separators drained to a sump that was tied to the process sewer.

Building Characterization:

Table 1 summarizes the industrial hygiene, radiological control, and asbestos samples collected in the 320 and 320BA Buildings.

Table 1. Summary of Characterization Surveys at 320 and 320BA.

Type	Date	Documented In	Results Summary
Pre-Demolition			
Asbestos	June 13, 2011	CNN # 159189	ACM was identified in floor tiles/sheeting, mastic, counter tops, fire doors, piping gaskets, hard pipe elbows and plaster.
IH Surveys and Beryllium Characterization	May 10, 2011 February 24, 2011	CNN (Be, Cd, Cr, Pb) # 158884. CNN # 154535.	No contamination above action levels. Identified potential hazards with asbestos, Hg, Pb and PCB ballasts.
Radiological Surveys	June 14, 2011 June 23, 2011 March 7, 2012	RSR-300PS-11-2730 RSR-300PS-11-2907 ERS-300PS-12-0005	One area of the floor was discovered with fixed contamination. No other radiological contamination was identified.

Associated WIDs sites:

The following "Rejected" Underground Injection Control (UICs) wells were excavated and backfilled (decommissioned) during the 320 Building demolition:

UIC – 300-241	320 Building Irrigation Line Effluent, Misc. Stream # 790
UIC – 300-88	320 Building Irrigation Line Effluent, Misc. Stream #626
UIC – 300-89	320 Building Irrigation Line Effluent, Misc. Stream #627
UIC – 300- 90	320 Building Irrigation Line Effluent, Misc. Stream #628
UIC – 300-91	320 Building, Misc. Stream # 350 was not found
300-15	Process sewer was removed to the limits of the layback excavation.

Anomalies Discovered During Demolition.

No anomalies were discovered during the demolition of the 320 Building or the 320BA.

Attachment 2: Project Photographs

Photo 1: Looking southeast at the 320 Building on August 22, 1968.

Photo 2. Looking northeast at the 320 Building & 320BA on August 16, 2011.

Photo 3. Looking east at the 320 Building basement and 320BA Slab on March 8, 2012.

Photo 4. Photo of the southwest corner of the 320 Building slab left due to utility interference.

Photo 5. Looking southwest at 320BA on February 7, 2011.

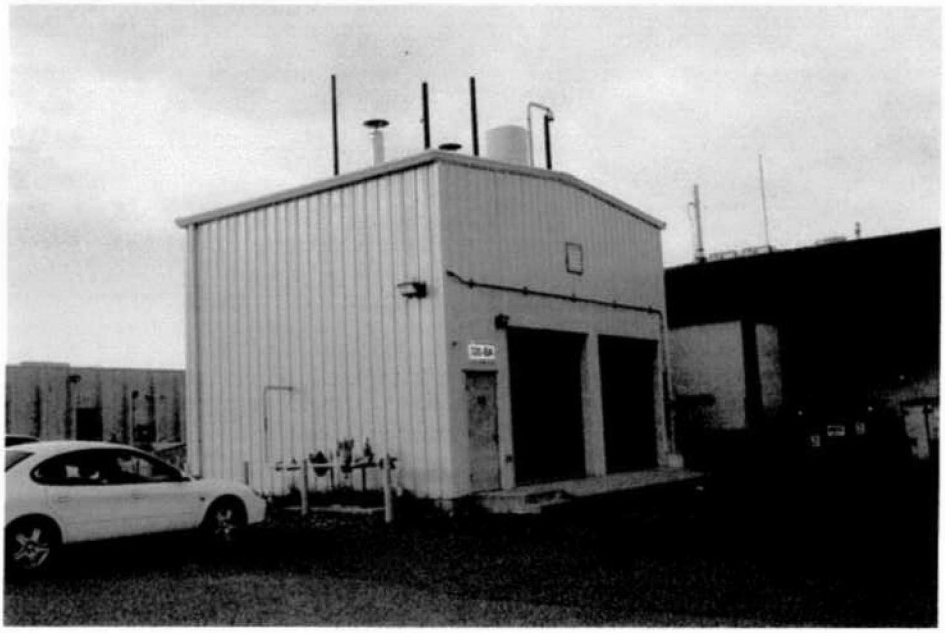
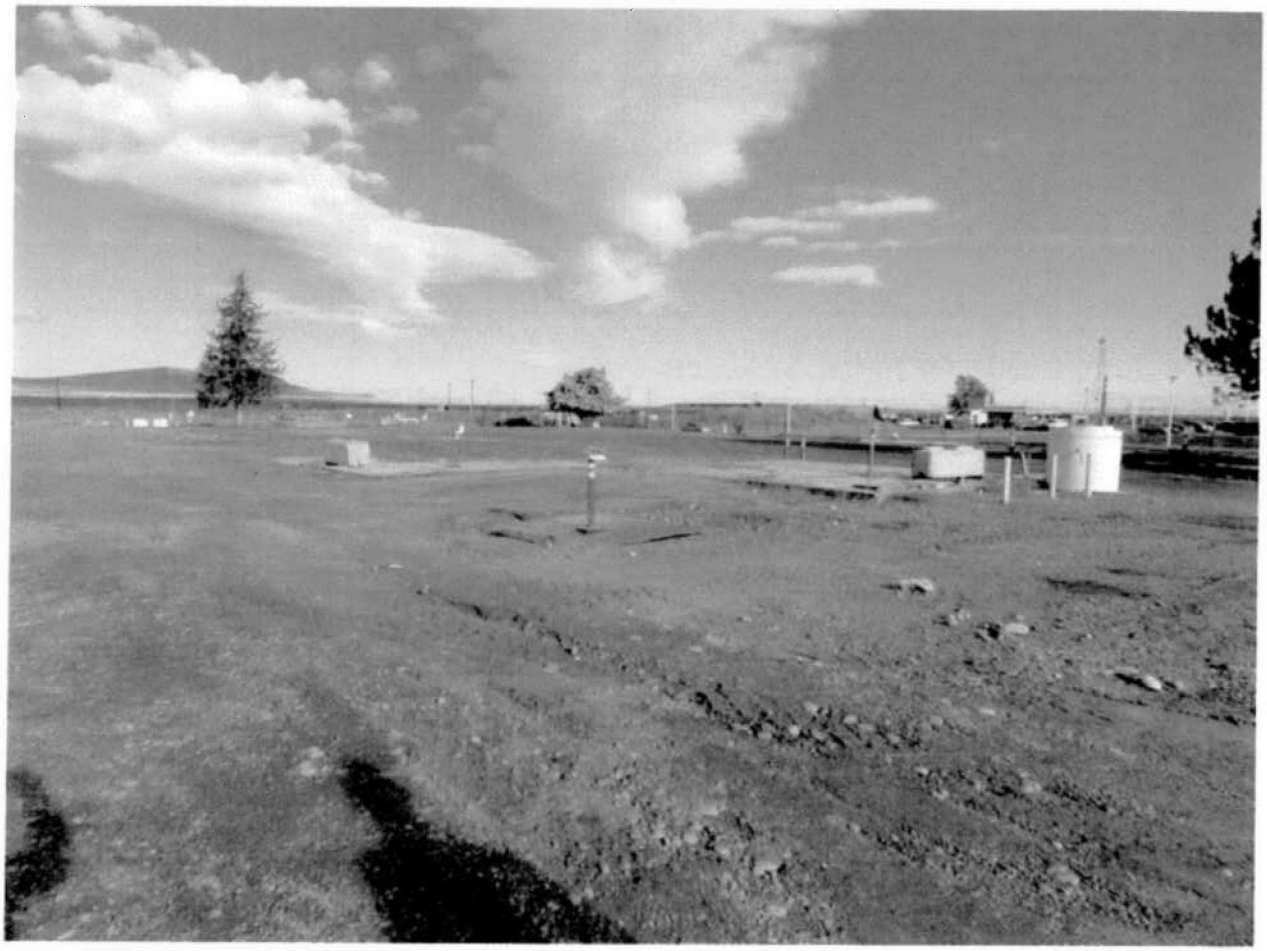
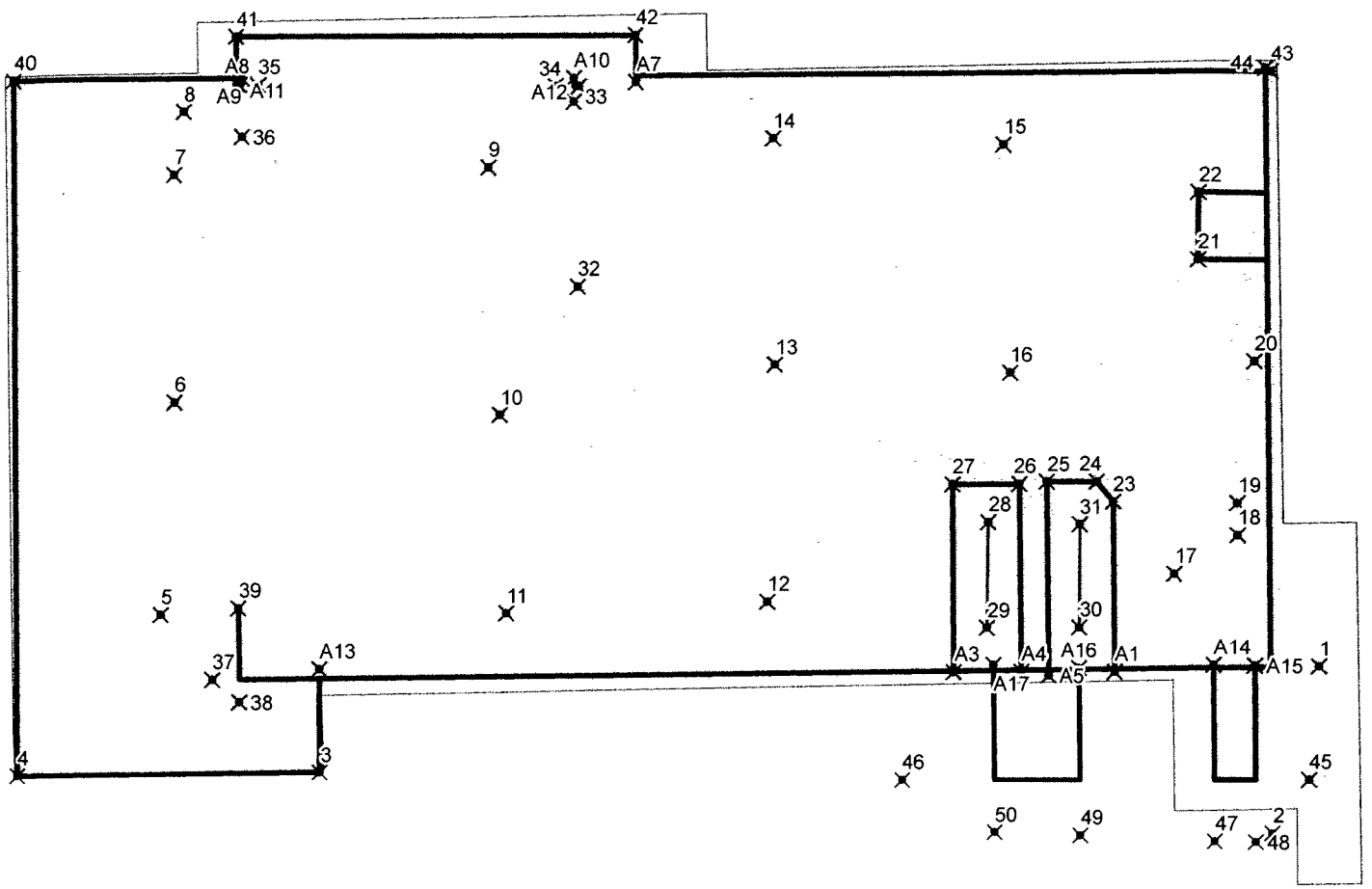


Photo 6. 320BA Slab on November 16, 2011.

Photo 7. 320 & 320BA after backfill. Looking northwest on April 29, 2012.



Attachment 3: Civil Survey.



GPS Point Data

- See GPS Survey Report for Point Details
- 320 Building Foundation and Walls
- Building Location Pre-Demolition

GPS Post-Demo Survey for the 320 Building Foundation and Walls (Remaining)

US State Plane 1983
Zone: Washington South 4602;
NAD83, NAVD88; Units are in Meters

0 5 10 20 Meters

WCH:01/26/12:V:\maaye\ArcMap\300A\320bldg.mxd, 5:13:19 PM

GPS Location of the 320 Building Foundation

Project : 320-building

Job 1174

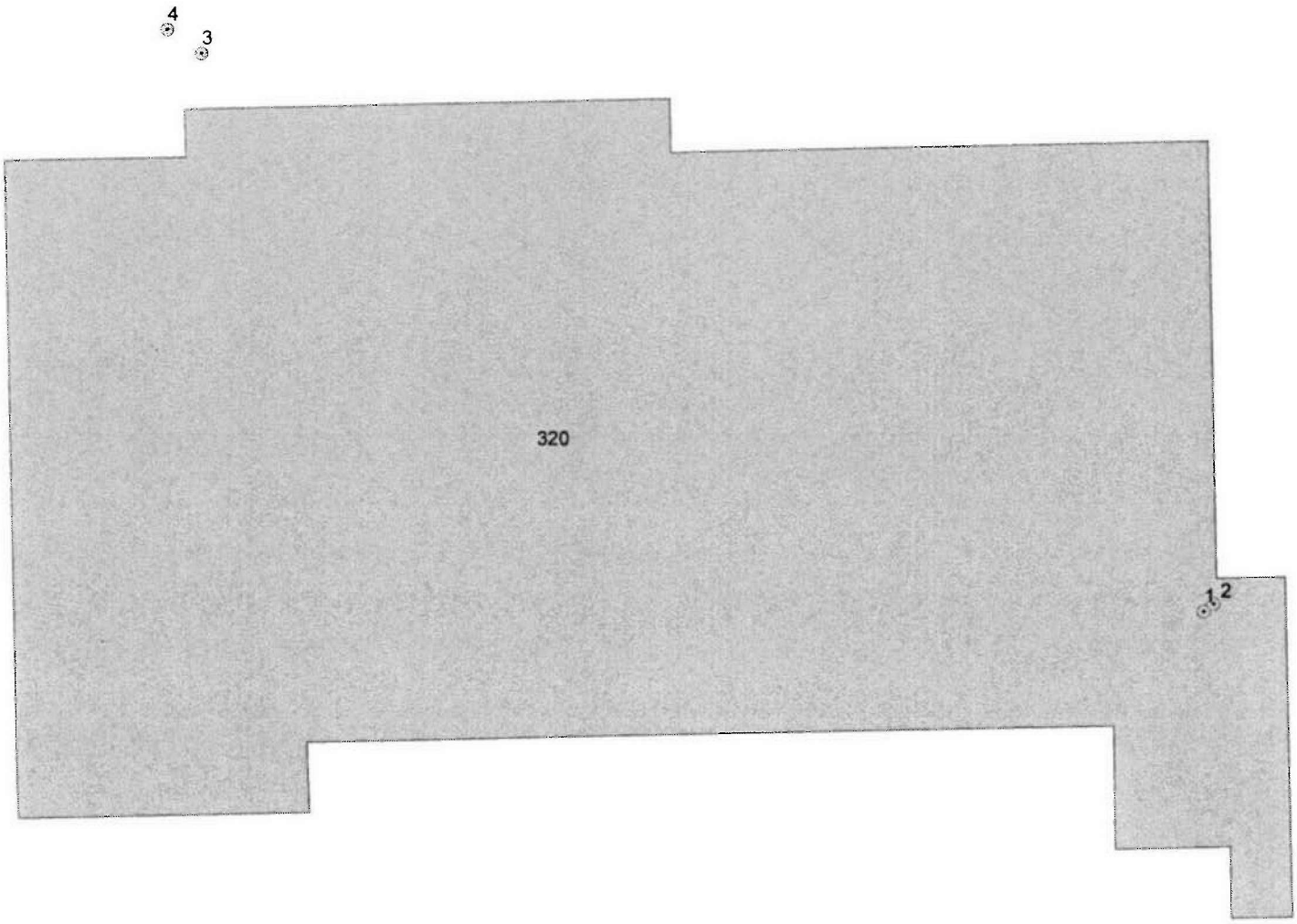
User name	maaye	**Date & Time**	4:53:13 PM 1/26/2012
Coordinate System	US State Plane 1983	**Zone**	Washington South 4602
Project Datum	(WGS 84)		
Vertical Datum	NAVD88	**Geoid Model**	Not selected
Coordinate Units	Meters		
Distance Units	Meters		
Height Units	Meters		

```
Survey Project Name:        320 Building- Foundation
Date:                       11/14/2011
Equipment:                  5800
Survey Purpose:             Map the remaining foundation and walls
Requested By:               Chris Strand
Location:                   300
Charge Code:
Field Surveyor:             Margo Aye
Survey Software Used:       Trimble Survey Controller, and  Geomatics Office V.11
Survey Equipment Used:      5800
Control Monuments Used:     300-70
Survey Method:              RTK
Horizontal Precision:       .020m
Vertical Precision:         .050m
Fieldwork Start Date:       11/14/11
Fieldwork Completion Date:  11/14/11
Notes:                      The building had been Demoloished, with foundation and walls
remaining this survey is for that structure, some areas were mapped with offsets, and
COGO generated (they have no elevation data).
```

Name	Northing	Easting	Elevation	Feature Code	Description:
1	115486.730m	593836.487m	122.193m	top-corn-offset	
2	115479.624m	593834.615m	122.080m	top-corn-offset	
3	115482.074m	593794.224m	121.797m	top-corn	
4	115481.883m	593781.420m	121.851m	top-corn	
5	115488.778m	593787.389m	118.972m	floor-topo	
6	115497.780m	593787.889m	118.985m	floor-topo	
7	115507.432m	593787.779m	118.965m	floor-topo	
8	115510.097m	593788.165m	118.892m	36in access	
9	115507.795m	593801.162m	118.985m	floor-topo	
10	115497.304m	593801.739m	118.967m	floor-topo	
11	115488.888m	593802.082m	118.994m	floor-topo	
12	115489.427m	593813.164m	118.973m	floor-topo	
13	115499.478m	593813.402m	118.996m	floor-topo	
14	115509.074m	593813.241m	118.986m	floor-topo	
15	115508.849m	593823.022m	118.970m	floor-topo	
16	115499.178m	593823.381m	118.985m	floor-topo	
17	115490.651m	593830.421m	118.969m	floor-topo	
18	115492.305m	593833.047m	118.945m	48in-access	
19	115493.665m	593833.036m	118.930m	48in-access	
20	115499.700m	593833.679m	118.919m	drain	
21	115504.005m	593831.321m	118.987m	corner-depression	
22	115506.840m	593831.339m	118.983m	corner-depression	
23	115493.708m	593827.785m	119.005m	floor-rise	
24	115494.559m	593827.074m	119.002m	floor-rise	
25	115494.549m	593824.963m	118.997m	floor-rise	
26	115494.459m	593823.810m	118.985m	floor-rise	
27	115494.432m	593820.974m	118.989m	floor-rise	
28	115492.833m	593822.503m	119.185m	floor-rise-top	
29	115488.342m	593822.471m	119.185m	floor-rise-top	
30	115488.377m	593826.386m	119.174m	floor-rise-top	
31	115492.743m	593826.366m	119.166m	floor-rise-top	
32	115502.775m	593805.013m	119.129m	floor-rise-top	

33	115510.603m	593804.780m	118.964m	corner-offset
34	115511.248m	593803.988m	118.983m	corner-offset
35	115511.251m	593791.320m	118.941m	corner-offset
36	115509.046m	593790.652m	118.978m	corner-offset
37	115485.994m	593789.627m	118.973m	corner-offset
38	115485.037m	593790.792m	118.964m	corner-offset
39	115489.055m	593790.712m	118.973m	corner-offset
40	115511.425m	593780.985m	122.073m	corner
41	115513.291m	593790.374m	122.011m	corner
42	115513.443m	593807.399m	121.973m	corner
43	115512.018m	593834.262m	122.164m	corner
44	115512.139m	593834.024m	122.194m	corner2offset
45	115481.908m	593836.117m	122.063m	offset2-wall indent
46	115481.850m	593818.927m	122.028m	offset2-wall indent
47	115479.275m	593832.220m	122.145m	offset2-wall indent
48	115479.258m	593833.927m	122.068m	offset2-wall indent
49	115479.525m	593826.483m	121.957m	offset2-wall indent
50	115479.640m	593822.861m	121.980m	offset2-wall indent
A1	115486.460m	593827.892m	?	
A10	115511.602m	593804.766m	?	
A11	115511.244m	593790.520m	?	
A12	115511.257m	593804.988m	?	
A13	115486.473m	593794.159m	?	
A14	115486.773m	593832.109m	?	
A15	115486.757m	593833.817m	?	
A16	115486.624m	593826.379m	?	
A17	115486.738m	593822.756m	?	
A3	115486.434m	593821.092m	?	
A4	115486.461m	593823.927m	?	
A5	115486.301m	593825.084m	?	
A7	115511.443m	593807.428m	?	
A8	115511.292m	593790.404m	?	
A9	115511.546m	593790.615m	?	

Back to top



Building Location Pre-Demolition

Cut Pipe Locations

Name	Feat_Code	Northing	Easting	Elevation
1	Fire Water -6in Steel	115491.31	593834.40	120.759
2	Process Sewer - 4in Steel	115491.65	593834.81	120.536
3	Sanitary Sewer - Clay Pipe	115516.38	593789.44	120.917
4	Process Sewer - 6in Steel	115517.45	593787.92	120.791

US State Plane 1983
Zone: Washington South 4602;
NAD83, NAVD88; Units are in Meters

GPS Post-Demo Survey for the 320 Building Cut Pipe Locations

0 5 10 20 Meters

WCH 01/26/12 V:\maaye\ArcMap\300A\320bldg.mxd, 5:13:19 PM

GPS Survey for the 320 Excavation Pipelines

Project : 320-piping

Job 1207

User name	maaye	**Date & Time**	2:13:23 PM 4/11/2012
Coordinate System	US State Plane 1983	**Zone**	Washington South 4602
Project Datum	(WGS 84)		
Vertical Datum	NAVD88	**Geoid Model**	Not selected
Coordinate Units	Meters		
Distance Units	Meters		
Height Units	Meters		

```
Survey Project Name:        320 Piping
Date:                       4/11/2012
Equipment:                  5800
Survey Purpose:             Map exposed pipes for the 320 excavation
Requested By:               Rick Blackwell
Location:                   300
Charge Code:
Field Surveyor:             Margo Aye
Survey Software Used:       Trimble Survey Controller, and  Geomatics Office V.11
Survey Equipment Used:      5800
Control Monuments Used:     300-70
Survey Method:              RTK
Horizontal Precision:       .020m
Vertical Precision:         .050m
Fieldwork Start Date:       04/11/12
Fieldwork Completion Date:  04/11/12
Notes:                      Pipe Diameters are estimates, and may be smaller or larger
than described.
```

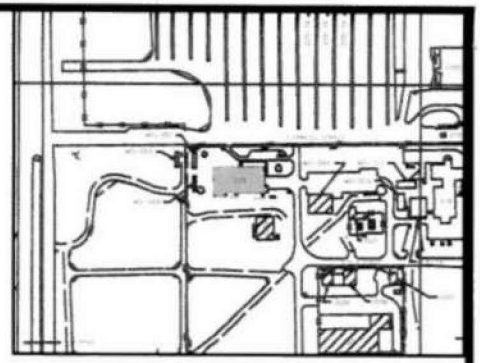
GPS Name	Northing	Easting	Elevation	Feature Code
1	115491.313m	593834.401m	120.759m	fire-water-6in steel cut end
2	115491.659m	593834.813m	120.536m	Process Sewer-4in steel cut end
3	115516.387m	593789.449m	120.917m	Sanitary Sewer-end Clay pipe
4	115517.458m	593787.924m	120.791m	Process Sewer Cut-End 6in

Back to top

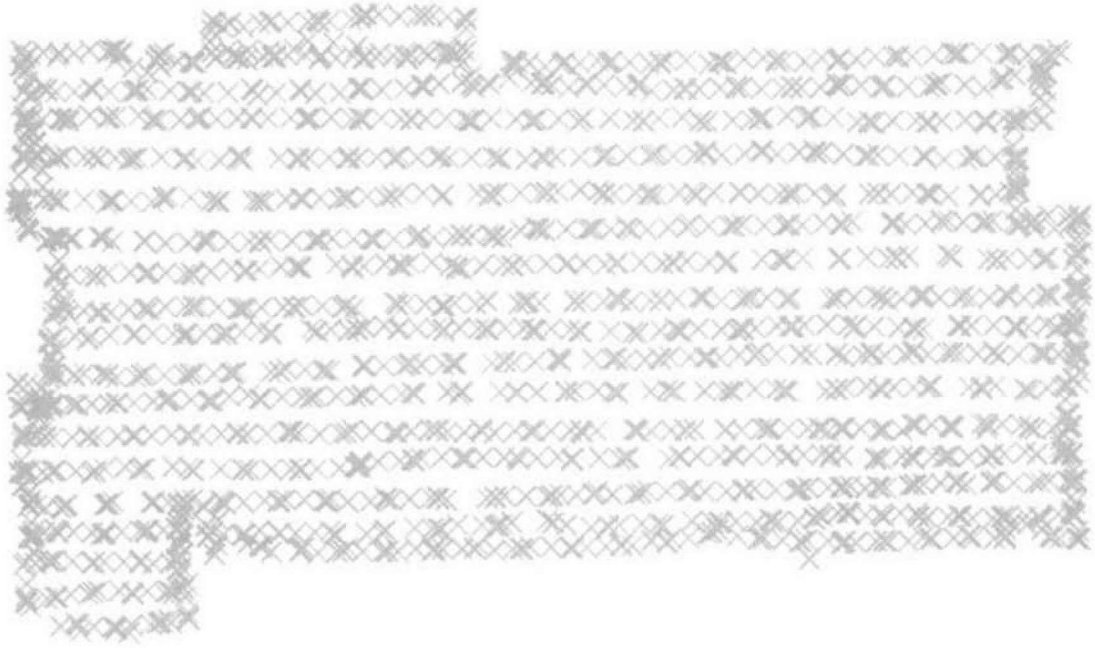
Attachment 4: GPERS Survey.

N

Bkg Location
854 meters N
1306 cpm



Site View



Copy

Legend	Summary Statistics
NET CPM	Coverage File: D4304
× <1959	Number of Data Pnts: 4009
● 1959 - 5000	Type of Survey: gamma
● 5000 - 10000	Max GCPM: 2253
● 10000 - 25000	Avg Bkg CPM: 1306
● 25000	Survey Date: 10/31/2011
	Area Surveyed: 1300 m^2
	Project File: ESRFRM110207
	Pdf File: ESRFRM110207C

300 D4 Field Remediation
300/320 Slab
GPERS Radiological Survey
Gamma Track Map

0 2 4 6 8 10
Meters

Environmental Excellence
HANFORD

EBERLINE SERVICES
HANFORD, INC.

Survey Map Prepared By Bruce Coomer, ESI

Attachment 5: EPA approval to leave basement walls and slab.

Harrie, John P

From: Strand, Christopher P
Sent: Thursday, March 08, 2012 6:47 AM
To: Harrie, John P
Subject: FW: Completion of 320 Removal Actions

This correspondence will need to be attached to the 320 FSCF.

-----Original Message-----
From: Guercia, Rudolph F (Rudy) [mailto:rudolph.guercia@rl.gov]
Sent: Tuesday, March 06, 2012 11:02 AM
To: 'Larry Gadbois'
Cc: Strand, Christopher P
Subject: RE: Completion of 320 Removal Actions

This is acceptable for the purposes of the RCCC.

R. F. Guercia, Field Engineering
U.S. Dept. of Energy, Richland Operations Office
PH: (509) 376-5494
Fax: (509) 373-0726

-----Original Message-----
From: Larry Gadbois [mailto:Gadbois.Larry@epamail.epa.gov]
Sent: Tuesday, March 06, 2012 10:44 AM
To: Guercia, Rudolph F (Rudy)
Cc: Strand, Christopher P
Subject: Re: Completion of 320 Removal Actions

This looks acceptable to EPA.
--Larry--

From: "Strand, Christopher P" <cpstrand@wch-rcc.com>
To: Larry Gadbois/R10/USEPA/US@EPA, "Guercia, Rudolph F" <rudolph.guercia@rl.doe.gov>
Date: 03/06/2012 10:37 AM
Subject: Completion of 320 Removal Actions

Larry, Rudy,

Provided for EPA and DOE concurrence is the proposed path forward to complete removal actions for the 320 Building in the 300 Area. This methodology is consistent with Sections 2.5 and 2.6 of the Removal Action Work Plan for 300 Area Facilities, DOE/RL-2004-77, Rev 2.

Please call if there are any questions.

Thanks,

Chris
554-2720

320 Physical Sciences Building History

The 320 Building was constructed in 1966 and served as a low-level analytical research

laboratory until being declared excess. The building was turned over to WCH for deactivation and demolition in February of 2011.

Current 320 Site Conditions:

The 320 Building has undergone demolition with the below-grade basement remaining in place. Process sewer piping is being removed from in and under slab by machine trenching. Additionally, two sumps (process and sanitary sewer) located in the basement will be removed via machine excavation. A layback has been established around the external basement walls to mitigate collapse hazards for work the balance of being performed. Process sewer segments are also being removed from the foundation excavation layback.

Remaining Actions for Closure:

Following removal of all process sewer piping and sumps, below-slab and layback soils will be sampled to evaluate suitability for use as back fill. One composite sample each for both trench and layback soils well be performed and will be comprised of 30 aliquots each, collected at even intervals from the spoils face. Analysis will include the full suite of 300-FF-2 contaminants of concern. If analytical results for the soils pass remedial action goals they will be used as part of below-grade fill material with the balance imported from Pit 6. Results of sampling will be provided to DOE and EPA via separate correspondence.

The remaining basement slab and walls will be left in place, with the walls demolished to 3 feet below-grade to support backfill. Both layback and trench excavations will be visually inspected for any anomalous conditions and final hand held radiological surveys will be
performed. Final closure will consist of backfill to general area
grade with all removal actions documented on a Facility Status Change Form (to include radiological and sampling results) . This approach is supported by completion of comprehensive GPERS surveys of the basement slab, and MARSSIM surveys of vertical wall surfaces that identified no radiological contamination. GPERS track maps and RSR references are attached.

Attachment 6: EPA approval to use excavated soil for clean backfill.

Harrie, John P

From: Larry Gadbois [Gadbois.Larry@epamail.epa.gov]
Sent: Tuesday, March 20, 2012 9:26 AM
To: Guercia, Rudolph F
Cc: Harrie, John P; Strand, Christopher P
Subject: RE: Completion of 320 Removal Actions

EPA approves this data as sufficient to use these two soil stockpiles for backfill.
--Larry--

"Strand, Christopher P" ---03/20/2012 08:24:09 AM---Larry, Rudy, Per the commitment below, attached is the Sample Results Summary for the

From: "Strand, Christopher P" <cpstrand@wch-rcc.com>
To: Larry Gadbois/R10/USEPA/US@EPA, "Guercia, Rudolph F" <rudolph.guercia@rl.doe.gov>
Cc: "Harrie, John P" <jpharrie@wch-rcc.com>
Date: 03/20/2012 08:24 AM
Subject: RE: Completion of 320 Removal Actions

Larry, Rudy,

Per the commitment below, attached is the Sample Results Summary for the 320 Building excavation spoils. An evaluation of data results for the two samples show no Remedial Action Goals were exceeded. EPA and DOE concurrence is requested for use of the excavated soils as basement fill.

Thanks,

Chris
554-2720

-----Original Message-----
From: Larry Gadbois [mailto:Gadbois.Larry@epamail.epa.gov]
Sent: Tuesday, March 06, 2012 10:44 AM
To: Guercia, Rudolph F
Cc: Strand, Christopher P
Subject: Re: Completion of 320 Removal Actions

This looks acceptable to EPA.
--Larry--

From: "Strand, Christopher P" <cpstrand@wch-rcc.com>
To: Larry Gadbois/R10/USEPA/US@EPA, "Guercia, Rudolph F" <rudolph.guercia@rl.doe.gov>
Date: 03/06/2012 10:37 AM
Subject: Completion of 320 Removal Actions

Larry, Rudy,

Provided for EPA and DOE concurrence is the proposed path forward to complete removal actions for the 320 Building in the 300 Area. This methodology is consistent with Sections 2.5 and 2.6 of the Removal Action Work Plan for 300 Area Facilities, DOE/RL-2004-77, Rev 2.

Please call if there are any questions.

Thanks,

Chris
554-2720

320 Physical Sciences Building History

The 320 Building was constructed in 1966 and served as a low-level analytical research laboratory until being declared excess. The building was turned over to WCH for deactivation and demolition in February of 2011.

Current 320 Site Conditions:

The 320 Building has undergone demolition with the below-grade basement remaining in place. Process sewer piping is being removed from in and under slab by machine trenching. Additionally, two sumps (process and sanitary sewer) located in the basement will be removed via machine excavation. A layback has been established around the external basement walls to mitigate collapse hazards for work the balance of being performed. Process sewer segments are also being removed from the foundation excavation layback.

Remaining Actions for Closure:

Following removal of all process sewer piping and sumps, below-slab and layback soils will be sampled to evaluate suitability for use as back fill. One composite sample each for both trench and layback soils well be performed and will be comprised of 30 aliquots each, collected at even intervals from the spoils face. Analysis will include the full suite of 300-FF-2 contaminants of concern. If analytical results for the soils pass remedial action goals they will be used as part of below-grade fill material with the balance imported from Pit 6. Results of sampling will be provided to DOE and EPA via separate correspondence.

The remaining basement slab and walls will be left in place, with the walls demolished to 3 feet below-grade to support backfill. Both layback and trench excavations will be visually inspected for any anomalous conditions and final hand held radiological surveys will be performed. Final closure will consist of backfill to general area grade with all removal actions documented on a Facility Status Change Form (to include radiological and sampling results) . This approach is supported by completion of comprehensive GPERS surveys of the basement slab, and MARSSIM surveys of vertical wall surfaces that identified no radiological contamination. GPERS track maps and RSR references are attached.

[attachment "320 soil sample results 3-19-12.doc" deleted by Larry Gadbois/R10/USEPA/US]

320 Building Soil Sampling Results – March 19, 2012

Below-grade demolition of the 320 Building generated approximately 2,000 cubic yards of soil during basement layback and process sewer pipe removal.

Two soil stockpiles were staged within the building foot print area (BFA):

- One stockpile is comprised of soil material excavated from the sides of the building to relieve lateral stress from foundation walls during demolition, and
- A smaller stockpile that was comprised of soil removed from below the building's basement slabs during sewer pipe removal.

On March 6 & 7, 2012, a composite sample was collected from each of the two soil stockpiles. Each composite was made up of a 30 aliquot samples collected at even intervals along the face of the two stockpiles.

1. **J1NLJ8** – 320 basement soil stockpile.
2. **J1NLJ9** – 320 perimeter soil stockpile.

The samples were submitted under chain of custody documentation to Lionville and Eberline laboratories and analyzed for:

- Gross Alpha & Beta,
- Isotopic Radionuclides
- Strontium, Technicium-99, Carbon-14, Tritium and Nickel-63,
- ICP Metals, Hex-Chromium and total Cyanide,
- IC Anions, Sulfides,
- TPH diesel and oil,
- Alcohols, Glycols & Ketones,
- VOAs, Semi-VOAs and PCBs.

Laboratory results are indicated on the tables below. The tables list only detectable results that were reported and were subsequently compared to the remedial action goals (RAGs) presented in the Remedial Design Report/Remedial Action Work Plan for the 300 Area (RDR/RAWP) – Table 2.1.

Conclusions

Based on both the RCF and laboratory results, the two soil stockpiles did not exhibit radionuclide activity above background levels. As shown in the tables below, laboratory results indicate that the soil does not contain contamination above the 300 Area RAGs for the analytes tested. This data is being used to document EPA concurrence to use the two soil stockpiles for backfill of the 320 Building.

Table-1 320 Soil Sample Results for J1NLJ8 – Basement Soil Stockpile – Radionuclides							
			Remedial Action Goals (mg/kg)				
COC/COPC	**Kd**	**Background**	**Maximum Result (pCi/g))**	**Industrial Direct Exposure**	**Residential Direct Exposure**	**Residential Protective of Groundwater**	**Residential Protective of the River**
Gross Alpha	NA	NA	**4.87**	NA	NA	NA	NA
Gross Beta	NA	NA	**14.3**	NA	NA	NA	NA
Carbon 14	200	NA	**0.766**	82	8.7	NA	NA
Thorium 228	200	NA	**0.692**	10.8	2.3	NA	NA
Thorium 232	200	1.3	**0.590**	4.8	1.0	NA	NA
Total Uranium	8.9	2.27	**1.26**	350	56.1	267	37
Uranium 233/234	8.9	1.1	**0.398**	167	27.2	127.4	17.9
Uranium 235	8.9	0.11	**0.028**	16	2.7	13.3	1.8
Uranium 238	8.9	1.1	**0.416**	167	26.2	127.4	17.3
Potassium 40	NA	NA	**13.8**	NA	NA	NA	NA
Radium 226	NA	NA	**0.346**	NA	NA	NA	NA
Radium 228	NA	NA	**0.590**	NA	NA	NA	NA

Table-3 320 Soil Sample Results for J1NLJ8 – Basement Soil Stockpile – Chem Data							
			Remedial Action Goals (mg/kg)				
COC/COPC	**Kd**	**Background**	**Maximum Result (mg/kg)**	**Industrial Direct Exposure**	**Residential Direct Exposure**	**Residential Protective of Groundwater**	**Residential Protective of the River**
Arsenic	3	6.5	**2.48**	58	20	20	20
Barium	25	132	**66.8**	4,900	1,600	200	400
Beryllium	790	1.51	**0.224**	104	10.4	1.51	1.51
Boron	3	NA	**0.900**	700,000	16,000	320	NA
Cadmium	30	0.81	**0.076**	139	13.9	0.81	0.81
Chromium	200	18.5	**7.98**	5.25E+06	120,000	18.5	18.5
Cobalt	50	15.7	**5.54**	1,050	24	15.7	NA
Copper	22	22	**10.5**	130,000	2,960	59.2	22
Lead	30	10.2	**3.13**	1,000	353	10.2	10.2
Lithium	50	33.5	**6.11**	7,000	160	33.5	NA
Manganese	50	512	**281**	165,000	3,760	512	512
Molybdenum	20	NA	**0.354**	17,500	400	8	NA
Nickel	65	19.1	**9.15**	70,000	1,600	19.1	27.4
Strontium	25	NA	**20.3**	2.10E+06	48,000	960	NA
Tin	130	NA	**1.54**	2.1E+06	48,000	960	NA
Vanadium	1,000	85.1	**52.0**	24,500	560	85.1	NA
Zinc	30	67.8	**41.3**	1.05E+06	24,000	480	67.8
Sulfate	0	237	**85.4**	NA	NA	25,000	NA
Nitrate/Nitrite-N	0	11.8/NA	**0.64**	350,000	8,000	100	200
ButylBenzylPhthalate	13.8	NA	**0.571**	700,000	16,000	320	250

Table-2 320 Soil Sample Results for J1NLJ9 – Perimeter Wall Soil Stockpile – Radionuclides							
			Remedial Action Goals (mg/kg)				
COC/COPC	Kd	Background	Maximum Result (pCi/g))	Industrial Direct Exposure	Residential Direct Exposure	Residential Protective of Groundwater	Residential Protective of the River
Gross Alpha	NA	NA	**7.87**	NA	NA	NA	NA
Gross Beta	NA	NA	**16.6**	NA	NA	NA	NA
Carbon 14	200	NA	**1.10**	82	8.7	NA	NA
Thorium 228	200	NA	**0.725**	10.8	2.3	NA	NA
Thorium 232	200	1.3	**0.797**	4.8	1.0	NA	NA
Total Uranium	8.9	2.27	**1.24**	350	56.1	267	37
Uranium 233/234	8.9	1.1	**0.394**	167	27.2	127.4	17.9
Uranium 238	8.9	1.1	**0.436**	167	26.2	127.4	17.3
Potassium 40	NA	NA	**14.8**	NA	NA	NA	NA
Radium 226	NA	NA	**0.414**	NA	NA	NA	NA
Radium 228	NA	NA	**0.658**	NA	NA	NA	NA

Table-4 320 Soil Sample Results for J1NLJ9 – 320 Perimeter Wall Soil Stockpile – Chem Data							
			Remedial Action Goals (mg/kg)				
COC/COPC	Kd	Background	Maximum Result (mg/kg)	Industrial Direct Exposure	Residential Direct Exposure	Residential Protective of Groundwater	Residential Protective of the River
Arsenic	3	6.5	**2.53**	58	20	20	20
Barium	25	132	**59.9**	4,900	1,600	200	400
Beryllium	790	1.51	**0.236**	104	10.4	1.51	1.51
Boron	3	NA	**0.841**	700,000	16,000	320	NA
Cadmium	30	0.81	**0.0903**	139	13.9	0.81	0.81
Chromium	200	18.5	**9.16**	5.25E+06	120,000	18.5	18.5
Cobalt	50	15.7	**4.86**	1,050	24	15.7	NA
Copper	22	22	**10.3**	130,000	2,960	59.2	22
Lead	30	10.2	**2.78**	1,000	353	10.2	10.2
Lithium	50	33.5	**6.91**	7,000	160	33.5	NA
Manganese	50	512	**231**	165,000	3,760	512	512
Molybdenum	20	NA	**0.362**	17,500	400	8	NA
Nickel	65	19.1	**7.76**	70,000	1,600	19.1	27.4
Strontium	25	NA	**20.2**	2.10E+06	48,000	960	NA
Tin	130	NA	**1.39**	2.1E+06	48,000	960	NA
Vanadium	1,000	85.1	**42.9**	24,500	560	85.1	NA
Zinc	30	67.8	**73.7**	1.05E+06	24,000	480	67.8
Sulfate	0	237	**67.2**	NA	NA	25,000	NA
Nitrate/Nitrite-N	0	11.8/NA	**2.84**	350,000	8,000	100	200
Motor Oil	50	NA	**13.5**	200	200	200	200